

**Abstract**

After applying a film-forming composition containing a polysiloxane, a pore-forming agent, an onium salt, and a solvent onto 5 a semiconductor substrate, the solvent is evaporated from the film-forming composition by a first heat treatment. Then, a second heat treatment is carried out in an inert-gas atmosphere to promote the polymerization of the polysiloxane and thus form a polysiloxane resin film. Thereafter, a third heat treatment is carried out in an 10 oxidizing-gas atmosphere to form pores in the polysiloxane resin film.